

```

1 //醜數/Ugly Numbers](1/2)
2 #define OUT "P19OUT.txt"
3 //*****
4 #include <iostream>
5 #include <ctime>
6 using namespace std;
7 void redir(void);
8 //*****
9 /* Work Space*/
10 #include <queue>
11 #include <vector>
12 #include <set>
13 //*****
14 int main(void)
15 {
16     redir(); //redirection
17 //*****
18 /* Work Space*/
19     priority_queue<long long> pq; //愈小的(整數)優先權愈低
20     set<long long> s;
21     int i;
22     long long x, x0;
23     int coef[] = {2, 3, 5}; //2x, 3x, 5x
24     int j;
25
26     pq.push(-1);
27     s.insert(-1);
28     for(i=1;;i++){
29         x = pq.top();
30         pq.pop();
31
32         if(i == 1500){
33             cout << "The 1500'th ugly number is " << -x << "." << endl;
34             break;
35         }
36         for(j=0; j<sizeof(coef)/sizeof(int); j++){
37             x0 = x * coef[j]; //compute 2x, 3x, 5x
38             if(!s.count(x0)){
39                 s.insert(x0);
40                 pq.push(x0);
41             }
42         }
43     }
44 //*****
45     //freopen("CON", "r", stdin); //取消重新導向
46     freopen("CON", "w", stdout);
47
48     printf("Time used = %.2f\n", (double)clock()/CLK_TCK); //傳回程式目前為止執行的時間
49
50     system("pause");
51     return 0; //the end...
52 }
53
54 void redir(void)
55 {
56     //freopen(IN, "r", stdin);
57     freopen(OUT, "w", stdout);
58 }
59 //*****
60
61
62
63

```

```
64 //醜數/Ugly Numbers](2/2)
65 /* Work Space*/
66 //Output(OUT)
67 /*
68 The 1500'th ugly number is 859963392.
69 */
```